

Notice of Allowability

Application No.

10/631,097

Examiner

Laura S. Weiner

Applicant(s)

LEISING ET AL.

Art Unit

1745

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 12-20-06.
2. ☒ The allowed claim(s) is/are 1,4-11,15-17 and 21-28.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|--|--|
| 1. <input type="checkbox"/> Notice of References Cited (PTO-892) | 5. <input type="checkbox"/> Notice of Informal Patent Application |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 6. <input checked="" type="checkbox"/> Interview Summary (PTO-413),
Paper No./Mail Date <u>20070207</u> |
| 3. <input type="checkbox"/> Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date _____ | 7. <input checked="" type="checkbox"/> Examiner's Amendment/Comment |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit
of Biological Material | 8. <input type="checkbox"/> Examiner's Statement of Reasons for Allowance |
| | 9. <input type="checkbox"/> Other _____ |

EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Mr. Michael Scalise on February 7, 2007.

The application has been amended as follows:

IN THE CLAIMS

Please substitute these claims for the present claims.

1. (Previously Presented) An electrochemical cell, which comprises:
 - a) an anode of an alkali metal;
 - b) a cathode of a composite cathode active material comprising a core of either ϵ -phase silver vanadium oxide (SVO) or copper silver vanadium oxide (CSVO), and mixtures thereof as a first cathode active material provided with a coating selected from the group consisting of β -phase SVO, γ -phase SVO, MnO_2 , and mixtures thereof as a second cathode active material; and
 - c) an electrolyte activating the anode and the cathode.

Art Unit: 1745

2. (Cancelled)

3. (Cancelled)

4. (Previously Presented) The electrochemical cell of claim 1 wherein the anode is lithium.

5. (Original) The electrochemical cell of claim 1 wherein the composite cathode active material is contacted to a cathode current collector selected from the group consisting of stainless steel, titanium, tantalum, platinum, aluminum, gold, nickel, and alloys thereof.

6. (Original) The electrochemical cell of claim 1 wherein the core of the first cathode active material is of particles having a size of from about 30 μm to about 300 μm .

7. (Original) The electrochemical cell of claim 1 wherein the coating of the second cathode active material is of a thickness of about 1 μm to about 10 μm .

8. (Previously Presented) The electrochemical cell of claim 1 in a case-negative design having the anode electrically connected to the casing and the cathode electrically connected to a terminal electrically insulated from the casing.

9. (Original) The electrochemical cell of claim 1 wherein the electrolyte has a first solvent selected from the group consisting of tetrahydrofuran, methyl acetate, diglyme, triglyme, tetraglyme, dimethyl carbonate, 1,2-dimethoxyethane,

Art Unit: 1745

1,2-diethoxyethane, 1-ethoxy,2-methoxyethane, ethyl methyl carbonate, methyl propyl carbonate, ethyl propyl carbonate, diethyl carbonate, dipropyl carbonate, and mixtures thereof, and a second solvent selected from the group consisting of propylene carbonate, ethylene carbonate, butylene carbonate, acetonitrile, dimethyl sulfoxide, dimethyl, formamide, dimethyl acetamide, γ -valerolactone, γ -butyrolactone, N-methyl-2-pyrrolidone, and mixtures thereof.

10. (Original) The electrochemical cell of claim 1 wherein the electrolyte includes a lithium salt selected from the group consisting of LiPF_6 , LiBF_4 , LiAsF_6 , LiSbF_6 , LiClO_4 , LiO_2 , LiAlCl_4 , LiGaCl_4 , $\text{LiC}(\text{SO}_2\text{CF}_3)_3$, $\text{LiN}(\text{SO}_2\text{CF}_3)_2$, LiSCN , LiO_3SCF_3 , $\text{LiC}_6\text{F}_5\text{SO}_3$, LiO_2CCF_3 , LiSO_6F , $\text{LiB}(\text{C}_6\text{H}_5)_4$, LiCF_3SO_3 , and mixtures thereof.

11. (Previously Presented) An implantable medical device, which comprises:

- a) a device housing;
- b) control circuitry contained inside the device housing;
- c) an electrochemical cell housed inside the device housing for powering the control circuitry, the cell comprising:
 - i) an anode comprising lithium;
 - ii) a cathode of a composite cathode active material comprising a core of ϵ -phase silver vanadium oxide (SVO) having its individual particles provided with a coating of γ -phase SVO; and
- d) a nonaqueous electrolyte activating the anode and the cathode; and

- e) a lead connecting the device housing to a body part intended to be assisted by the medical device, wherein the electrochemical cell powers the control circuitry both during a device monitoring mode to monitor the physiology of the body part and a device activation mode to provide ~~the~~ a therapy to the body part.

12. to 14. (Cancelled)

15. (Currently Amended) The implantable medical device of claim 11 wherein the composite cathode active material is contacted to a cathode current collector selected from the group consisting of stainless steel, titanium, tantalum, platinum, aluminum, gold, nickel, and alloys thereof.

16. (Currently Amended) The implantable medical device of claim 11 wherein the core is of particles having a size of from about 30 μm to about 300 μm and the coating is of a thickness of about 1 μm to about 10 μm .

17. (Currently Amended) A method for providing a composite cathode active material, comprising the steps of:

- a) providing a core cathode active material selected from the group consisting of ϵ -phase silver vanadium oxide (SVO), copper silver vanadium oxide (CSVO), and mixtures thereof in a granular form;
- b) providing a solution of an organic solvent having a coating material selected from the group consisting of β -phase SVO, γ -phase SVO, and mixtures thereof provided therein;

- c) mixing the core cathode active material into the solution containing the coating material to thereby form a sol-gel of the coating material coating the core cathode active material;
- d) drying the resulting coated core cathode active material to substantially remove the organic solvent; and
- e) heating the dried coated core cathode active material to provide the composite cathode active material.

18. to 20. (Cancelled)

21. (Original) The method of claim 17 including providing the sol-gel solution as either an aqueous or a nonaqueous solution.

22. (Currently Amended) The method of claim 17 including mixing the coating material with the core cathode active material in a range, by weight, of about 1:3 to about 1:20.

23. (Currently Amended) The method of claim 17 including drying the coated core cathode active material at a reduced pressure in a range of about 20 inches of Hg. to about 50 inches of Hg.

24. (Currently Amended) The method of claim 17 including drying the coated core cathode active material at a temperature in a range of about 200°C to about 500°C.

Art Unit: 1745

25. (Currently Amended) The method of claim 17 including drying the coated core cathode active material for a time of about 10 minutes to about 6 hours.

26. (Currently Amended) An electrochemical cell, which comprises:

- a) an anode of lithium;
- b) a cathode of a core of a composite cathode active material selected from the group consisting of ϵ -phase silver vanadium oxide (SVO), β -phase SVO, γ -phase SVO, CSVVO, V_2O_5 , MnO_2 , $LiCoO_2$, $LiNiO_2$, $LiMnO_2$, $LiMn_2O_4$, CuO_2 , TiS_2 , Cu_2S , FeS , FeS_2 , Ag_2O , Ag_2O_2 , CuF , Ag_2CrO_4 , copper vanadium oxide, and mixtures thereof having its individual particles ~~provided~~ coated with a coating material selected from the group consisting of γ -phase SVO, β -phase SVO, MnO_2 , and mixtures thereof, wherein the core material and the coating material are not the same; and
- c) an electrolyte activating the anode and the cathode.

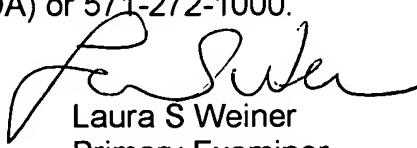
27. (Previously Presented) The electrochemical cell of claim 1 in a case-positive design having the cathode electrically connected to the casing and the anode electrically connected to a terminal electrically insulated from the casing.

28. (Previously Presented) The electrochemical cell of claim 1 in a case-neutral design having the anode and cathode electrically connected to respective terminals electrically insulated from the casing.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Laura S. Weiner whose telephone number is 571-272-1294. The examiner can normally be reached on M-F (6:30-4:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


Laura S Weiner
Primary Examiner
Art Unit 1745

February 12, 2007